

CLAIMS

1. A throat for transmitting acoustic energy from a source driver unit to a feeder section of a directivity controlling acoustic horn, the throat comprising:
 - a circular throat entrance connectable to the source driver unit, the throat entrance having a diameter;
 - a rectangular throat exit connectable to or integral with the feeder section, the throat exit defined by a pair of parallel long sides and a pair of parallel short sides, the short sides having a length less than or equal to the diameter of the throat entrance; and
 - a circular cross-section to rectangular cross-section transition portion extending between the throat entrance and the throat exit, the transition portion having an internal surface,
 - wherein a pair of opposite profiles of the internal surface of the throat, lying within a first plane that bisects the throat entrance and perpendicularly bisects the long side of the throat exit, initially diverge in a direction from the throat entrance towards the throat exit.
2. A throat as claimed in claim 1 wherein each said profile initially diverges at substantially the same angle with respect to an axis longitudinal to the throat.
3. A throat as claimed in claim 2 wherein said profiles of the throat converge to a neck having a width less than the diameter of the entrance to the throat, thereby improving the dispersion of high frequency acoustic energy.
4. A throat as claimed in claim 3 wherein the throat is shaped such that its profiles, through substantially all cross-sections longitudinal to the throat, initially diverge from the longitudinal axis of the throat in a direction from the throat entrance towards the throat exit.

5. A throat as claimed in claim 3 wherein the throat is shaped such that its profiles, through substantially all cross-sections longitudinal to the throat, initially diverge from the longitudinal axis of the throat at the same angle in a direction from the throat entrance towards the throat exit.
6. A throat for transmitting acoustic energy from a source driver unit to a feeder section of a directivity controlling acoustic horn, the throat comprising:
a circular throat entrance connectable to the source driver unit;
a rectangular throat exit connectable to or integral with the feeder section; and
a circular cross-section to rectangular cross-section transition portion
extending between the throat entrance and the throat exit,
wherein the throat is shaped such that its profiles, through substantially all cross-sections longitudinal to the throat, initially diverge from an axis longitudinal to the throat at the same angle in a direction from the throat entrance towards the throat exit.
7. A directivity controlling acoustic horn assembly comprising:
a source driver unit having a divergent frusto-conical portion terminating in a circular exit for transmission of acoustic energy;
a throat having: a circular entrance; a rectangular exit; and a circular cross-section to rectangular cross-section transition portion extending between the throat entrance and the throat exit, the circular entrance matching the circular exit of the source driver and the rectangular exit having a height and a width;
a feeder section having a first end and a second end, the first end connected to the exit of the throat; and
a bell section having an entrance and terminating in an open mouth, the entrance of the bell section connected to or integral with the second end of the feeder section,
wherein opposite profiles of the throat, lying within a first plane that bisects the throat entrance and perpendicularly bisects the long side of the throat exit, substantially match the angle of the frusto-conical portion at the exit to the source

driver unit thereby providing a smooth transition for sound waves propagating from the source driver unit into the throat.

8. A horn as claimed in claim 7 wherein the height of the rectangular throat exit is less than the diameter of the throat entrance.

9. A horn as claimed in claim 8 wherein said profiles of the throat converge to a neck having a height less than the diameter of the entrance to the throat, thereby improving the dispersion of high frequency acoustic energy.

10. A horn as claimed in claim 9 wherein the throat is shaped such that its profiles, through substantially all cross-sections longitudinal to the throat, substantially match the angle of the frusto-conical portion at the exit to the source driver unit thereby providing a smooth transition for sound waves propagating from the source driver unit into the throat.

11. A throat for transmitting acoustic energy from a source driver unit to a feeder section of a directivity controlling acoustic horn, the throat substantially as hereinbefore described with reference to and as illustrated in Figures 7, 7a and 7b.

12. A throat for transmitting acoustic energy from a source driver unit to a feeder section of a directivity controlling acoustic horn, the throat substantially as hereinbefore described with reference to and as illustrated in Figures 8a and 8b.

13. A directivity controlling acoustic assembly as hereinbefore described with reference to and as illustrated in Figures 7, 7a and 7b.

14. A directivity controlling acoustic assembly as hereinbefore described with reference to and as illustrated in Figures 8a and 8b.